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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/006,777	11/08/2001	John L. Galvagni	AVX-122	9869
22827	7590	05/06/2004	EXAMINER	
DORITY & MANNING, P.A. POST OFFICE BOX 1449 GREENVILLE, SC 29602-1449			LEWIS, MONICA	
			ART UNIT	PAPER NUMBER
			2822	

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/006,777

Applicant(s)

GALVAGNI, JOHN L.

Examiner

Monica Lewis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 19-21 and 24-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-21 and 24-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 May 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                            | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

### **DETAILED ACTION**

1. This action is in response to the request for consideration filed February 17, 2004.

#### ***Continued Examination Under 37 CFR 1.114***

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/17/04 has been entered.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 19, 20, 21, 24 and 26 are rejected under 35 U.S.C. 103(a) as obvious over Takagi et al. (U.S. Patent No. 4,800,459) in view of Adae-Amoakoh et al. (U.S. Publication No. 2002/0145203) and O'Bryan et al. (U.S. Publication No. 2001/0038906).

In regards to claim 19, Takagi et al. ("Takagi") discloses the following:

- a) a first device layer with a first series of resistive/conductive patterns thereon (For Example: See Figure 1);
- b) a second device layer with a plurality of via drilled therethrough (For Example: See Figure 1);
- c) a unitary device body formed by the bonded union of the first and second device layers (For Example: See Figure 1);

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d) a second series of resistive/conductive patterns on an outer layer of said unitary body (For Example: See Figure 1);

e) a plurality of terminations on said unitary body for electrical connection between other electronic devices and components of said device (For Example: See Figure 1);

f) individual passive components with first and second opposing electrical terminations, wherein each said individual passive component is vertically mounted into a selected of said plurality of via and wherein one of said first and second opposing electrical terminations (For Example: See Figure 1);

g) multiple portions of a non-conductive material respectively substantially filling the space between each of said individual passive components and the surrounding via, wherein said non-conductive material partially encases each said individual passive component to hold it in place while leaving one of said first and second opposing electrical terminations exposed and prevents shorting between respective first and second opposing electrical terminations (For Example: See Figure 1); and

h) an electrical connection between each of said passive components and at least a portion of said second series of resistive/conductive patterns on said outer surface of said unitary device body (For Example: See Figure 1).

In regards to claim 19, Takagi fails to disclose the following:

a) a capture pad.

However, Adae-Amoakoh et al. ("Adae") discloses the use of capture pads (For Example: Paragraph 29). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Takagi to include the use of capture pads as disclosed in Adae because it aids in the providing an electrical connection among various components (For Example: See Paragraph 29).

Additionally, since Takagi and Adae are both from the same field of endeavor, the purpose disclosed by Adae would have been recognized in the pertinent art of Takagi.

b) first and second device layers comprise an epoxy-fiberglass composite material.

However, O'Bryan et al. ("O'Bryan") discloses the use of an epoxy-fiberglass composite material (For Example: Paragraph 75). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Takagi to include the use epoxy-fiberglass composite material as disclosed in O'Bryan because it aids in preparing a PWB (For Example: See Paragraph 75).

Additionally, since Takagi and O'Bryan are both from the same field of endeavor, the purpose disclosed by O'Bryan would have been recognized in the pertinent art of Takagi.

In regards to claim 20, Takagi fails to disclose the following:

- a) first and second layers are made of FR4.

However, O'Bryan discloses the use of FR-4 (For Example: Paragraph 80). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Takagi to include the use FR-4 as disclosed in O'Bryan because it aids in preparing a PWB (For Example: See Paragraph 75).

Additionally, since Takagi and O'Bryan are both from the same field of endeavor, the purpose disclosed by O'Bryan would have been recognized in the pertinent art of Takagi.

In regards to claim 21, Takagi discloses the following:

- a) device is a printed circuit board (For Example: See Figure 1 and Column 2 Lines 52-62).

In regards to claim 24, Takagi discloses the following:

- a) passive components comprise any combination of resistors, capacitors, varistors, and thermistors (For Example: See Column 5 Lines 34 and 35).

In regards to claim 26, Takagi fails to disclose the following:

- a) bonded union of the first and second device layers is formed of one of lamination, weight-firing, gluing and spritzing solvent.

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However, the following limitation makes it a product by process claim: a) "formed of one of lamination, weight-firing, gluing and spritzing solvent." The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "product by, all of" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "product by process" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

5. Claims 25, 30 and 33 are rejected under 35 U.S.C. 103(a) as obvious over Takagi et al. (U.S. Patent No. 4,800,459) in view of O'Bryan et al. (U.S. Publication No. 2001/0038906).

In regards to claim 25, Takagi discloses the following:

a) a plurality of first device layers, each such layer having a first series of resistive/conductive patterns thereon and a plurality of via drilled therethrough (For Example: See Figure 1);

b) a plurality of second device layers, each such layer having a plurality of via drilled therethrough (For Example: See Figure 1);

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c) a unitary device body formed by the bonded union of an interleaved stack of said plurality of first and said second device layers (10), wherein each of said via correspond to a respective portion of the resistive/conductive patterns on the underlying device layer and wherein one of said second device layers forms the uppermost device layer and the lowermost device layer is one of said first device layers (For Example: See Figure 1);

d) a second series of resistive/conductive patterns on an outer layer of said uppermost device layer (For Example: See Figure 1);

e) a plurality of terminations on said unitary body for electrical connection between other electronic devices and various of the resistive/conductive patterns throughout said unitary device body (For Example: See Figure 1);

f) individual passive components (26, 27 and 28) with respective first and second opposing terminations, wherein each individual passive component is vertically mounted into a selected of said plurality of via and wherein one of said first and second opposing terminations are electrically connected to a portion of said underlying first device layer's series of resistive/conductive patterns (For Example: See Figure 1);

g) multiple portions of a non-conductive material respectively substantially filling the space between each of said individual passive components and the surrounding via, wherein said non-conductive material partially encases each said individual passive component to hold it in place while leaving one of said first and second opposing electrical terminations exposed and prevents one of said first and second opposing electrical terminations exposed and prevents shorting between respective first and second opposing electrical terminations (For Example: See Figure 1); and

h) an electrical connection between each of said passive components and at least a portion of said overlying first device layer's first series of resistive/conductive patterns through a corresponding one of said first device layer's plurality of via (For Example: See Figure 1).

In regards to claim 25, Takagi fails to disclose the following:

a) first and second device layers comprise an epoxy-fiberglass composite material.

However, O'Bryan discloses the use of an epoxy-fiberglass composite material (For Example: Paragraph 75). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Takagi to include the use

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epoxy-fiberglass composite material of as disclosed in O'Bryan because it aids in preparing a PWB (For Example: See Paragraph 75).

Additionally, since Takagi and O'Bryan are both from the same field of endeavor, the purpose disclosed by O'Bryan would have been recognized in the pertinent art of Takagi.

In regards to claim 30, Takagi fails to disclose the following:

a) bonded union of the first and second device layers is formed of one of lamination, weight-firing, gluing and spritzing solvent.

However, the following limitation makes it a product by process claim: a) "formed of one of lamination, weight-firing, gluing and spritzing solvent." The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.



In regards to claim 33, Takagi discloses the following:

a) passive components comprise any combination of resistors, capacitors, varistors, and thermistors (For Example: See Column 5 Lines 34 and 35).

6. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as obvious over Takagi et al. (U.S. Patent No. 4,800,459) in view of Adae-Amoakoh et al. (U.S. Publication No. 2002/0145203), O'Bryan et al. (U.S. Publication No. 2001/0038906) and Schroeder (U.S. Patent No. 5,512,710).

In regards to claim 27, Takagi fails to disclose the following:

a) passive components are bonded to their respective capture pads by way of solder reflow.

However, Schroeder discloses the use of solder (For Example: See Column 2 Lines 57-59). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Takagi to include the use solder as disclosed in Schroeder because it aids in bonding passive components (For Example: See Column 2 Lines 57-59).

Additionally, since Takagi and Schroeder are both from the same field of endeavor, the purpose disclosed by Schroeder would have been recognized in the pertinent art of Takagi.

However, the following limitation makes it a product by process claim: a) "solder reflow." The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is

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unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 28, Takagi fails to disclose the following:

a) passive components are bonded to their respective capture pads by way of cured conductive epoxy.

However, Schroeder discloses the use of epoxy (For Example: See Column 2 Lines 57-59). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Takagi to include the use of epoxy as disclosed in Schroeder because it aids in bonding passive components (For Example: See Column 2 Lines 57-59).

Additionally, since Takagi and Schroeder are both from the same field of endeavor, the purpose disclosed by Schroeder would have been recognized in the pertinent art of Takagi.

However, the following limitation makes it a product by process claim: a) "cured conductive epoxy." The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product

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itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

7. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as obvious over Takagi et al. (U.S. Patent No. 4,800,459) in view of O'Bryan et al. (U.S. Publication No. 2001/0038906) and Schroeder (U.S. Patent No. 5,512,710).

In regards to claim 31, Takagi fails to disclose the following:

a) passive components are bonded to their respective capture pads by way of solder reflow.

However, Schroeder discloses the use of solder (For Example: See Column 2 Lines 57-59). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Takagi to include the use solder as disclosed in Schroeder because it aids in bonding passive components (For Example: See Column 2 Lines 57-59).

Additionally, since Takagi and Schroeder are both from the same field of endeavor, the purpose disclosed by Schroeder would have been recognized in the pertinent art of Takagi.

However, the following limitation makes it a product by process claim: a) "solder reflow." The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 32, Takagi fails to disclose the following:

a) passive components are bonded to their respective capture pads by way of cured conductive epoxy.

However, Schroeder discloses the use of epoxy (For Example: See Column 2 Lines 57-59). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Takagi to include the use epoxy as

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disclosed in Schroeder because it aids in bonding passive components (For Example: See Column 2 Lines 57-59).

Additionally, since Takagi and Schroeder are both from the same field of endeavor, the purpose disclosed by Schroeder would have been recognized in the pertinent art of Takagi.

However, the following limitation makes it a product by process claim: a) "cured conductive epoxy." The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

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***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 571-272-1838.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

A handwritten signature in black ink, appearing to read 'Mary Wilczewski', with a stylized flourish at the end.

ML

April 21, 2004

**Mary Wilczewski**  
**Primary Examiner**